



US006671393B2

(12) **United States Patent**
Hays et al.

(10) **Patent No.:** **US 6,671,393 B2**
(45) **Date of Patent:** ***Dec. 30, 2003**

(54) **AUTOMATED METHOD FOR IMAGE ANALYSIS OF RESIDUAL PROTEIN**

(75) Inventors: **Presley Hays**, Pasadena, CA (US);
Michal L. Peri, Irvine, CA (US);
Douglas Harrington, San Clemente, CA (US)

(73) Assignee: **ChromaVision Medical Systems, Inc.**,
San Juan Capistrano, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/014,006**

(22) Filed: **Dec. 10, 2001**

(65) **Prior Publication Data**

US 2002/0176613 A1 Nov. 28, 2002

Related U.S. Application Data

- (63) Continuation of application No. 09/612,022, filed on Jul. 7, 2000, now Pat. No. 6,330,349, and a continuation-in-part of application No. 08/758,436, filed on Nov. 27, 1996, now Pat. No. 6,215,892.
- (60) Provisional application No. 60/143,181, filed on Jul. 9, 1999, and provisional application No. 60/026,805, filed on Nov. 30, 1995.

(51) **Int. Cl.⁷** **G06K 9/00**

(52) **U.S. Cl.** **382/128**

(58) **Field of Search** 382/130, 131,
382/132, 133, 134, 128, 129, 160, 260,
264, 274

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,125,828 A	11/1978	Resnick et al.	340/146.3
4,939,240 A	7/1990	Chu et al.	530/387
5,016,173 A	5/1991	Kenet et al.	364/413.13
5,231,580 A	7/1993	Cheung et al.	364/413.13
5,428,690 A	6/1995	Bacus et al.	382/128
5,499,097 A	3/1996	Ortyn et al.	356/372
6,040,139 A	3/2000	Bova	435/6
6,069,242 A	5/2000	Zavada et al.	536/24.31

Primary Examiner—Bhaves M. Mehta

Assistant Examiner—Kanji Patel

(74) *Attorney, Agent, or Firm*—Fish & Richardson P.C.

(57) **ABSTRACT**

An automated method for evaluating the amount of residual protein levels following treatment of cellular specimens. Particular methods include the measurement of maternal neutrophil alkaline phosphatase after treatment with or without urea or heat, measurement of leukocyte acid phosphatase after treatment with or without tartrate, and measurement of leukocyte esterase after treatment with α -naphthol butyrate with or without fluoride.

11 Claims, 25 Drawing Sheets

